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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,826	08/13/2002	Mark J. Pykett	C1005.70008US00	5264

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EXAMINER	
BELYAVSKYI, MICHAIL A	
ART UNIT	**PAPER NUMBER**
1644	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/088,826	PYKETT ET AL.	
	Examiner	Art Unit	
	Michail A. Belyavskyi	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,9-16,18-20 and 24-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,9-16,18-20 and 24-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

RESPONSE TO APPLICANT'S AMENDMENT

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/20/06 has been entered.

2. Claims 1, 2, 5, 9-16, 18-20, 24-29 are pending.

3. Claims 1, 2, 5, 9-16, 18-20, 24-29 reads on a method for in vitro culture of hematopoietic progenitor cells to produce differentiated cells, wherein differentiated cells are neuronal cells and wherein growth factors are bFGF and EGF and wherein solid matrix is tantalum-coated are under consideration in the instant application.

In view of the amendment, filed 06/20/06 the following rejection remains

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 5, 9-16, 18-20, 24-29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/15629 in view of the known fact disclosed in the Specification on page 11, lines 9-26 and US Patent 6,830,927 as is evidence by newly cited Stedman's Medical Dictionary page 1, 2000, US Patent 5,397706 and WO 0017326 for the same reasons set forth in the previous Office Action, mailed on 06/20/06.

Applicant's arguments, filed 12/20/06 have been fully considered, but have not been found convincing

Applicant asserts that: (i) the Examiner disregards the fact that the references teach differentiation of different progenitor population, WO' 629 teaches differentiation of hematopoietic progenitor cells and US Patent'927 differentiation of neuroephithelial stem cells; (ii) there is no motivation or suggestion to combine the cited references at least because the references teach different progenitor populations; (iii) The Examiner failed to provide a support for his position that one skill in the art at the time the invention was made would know that pluripotent progenitor stem cell are the cells that can be induced to differentiate into various specialized types of cells.

Applicants have traversed the primary and the secondary references pointing to the differences between the claims and the disclosure in each reference. Applicant is respectfully reminded that the rejection is under 35 USC103 and that unobviousness cannot be established by attacking the references individually when the rejection is based on the combination of the references. see In re Keller, 642 F.2d 4B, 208 USPQ 871, 882 (CCPA 1981) See MPEP 2145. This applicant has not done, but rather argues the references individually and not their combination. One cannot show non-obviousness by attacking references individually where the rejections are based on a combination of references. In re Young 403 F.2d 759, 150 USPQ 725 (CCPA 1968).

With regards to the statement, that the Examiner disregards the fact that the references teach differentiation of different progenitor population and there is no motivation or suggestion to combine the cited references at least because the references teach different progenitor populations.

The examiner disagrees with that statement. It is noted that the primary reference, i.e. WO'629 teaches exactly the same population of progenitor cells as claimed in the instant claims. As evidence from newly cited Stedman's Medical Dictionary, at the time the invention was made one skill in the art would know that pluripotent progenitor stem cells are the cells that can be induced to differentiate into various specialized types of cells of hematopoietic or non-hematopoietic lineage.. Moreover, as is evidence from newly cited WO'0017326 or US Patent 5,397,706 at the time the invention was made one skill in the art would know that depending on the growth conditions and growth factors hematopoietic progenitor cells can be induced to differentiate into various specialized types of cells of hematopoietic or non-hematopoietic lineage. Thus, the issue is not whether individual references teaches differentiation of different progenitor, but rather what they would they collectively suggest to one skill in the art.

Specific statements in the references themselves which would spell out the claimed invention are not necessary to show obviousness, since questions of obviousness involves not only what references expressly teach, but what they would collectively suggest to one of ordinary skill in the art. See CTS Com. v. Electro Materials Corp. of America 202 USPQ 22 (DC SINY); and In re Burckel 201 USPQ 67 (CCPA).

As has been discussed in the previous Office Action, WO' 629 teaches a new method for *in vitro* culture of progenitor cells , wherein that said cells are cultured under growth condition that promote differentiation, using three dimensional porous matrix having a unitary microstructure having a percent of open space of at least 75% and having a diameter of pores at mid-point on average of less that 150 μm (see page 5 lines 12 in particular). WO'629 teaches that porous solid matrix is a metal-coated wherein a metal is tantalum (see page 5, lines 10-25 in particular).). WO' 629 teaches porous solid matrix having seeded hematopoietic progenitor cells wherein said cells is impregnated with a gelatinous agent that occupies pores of the matrix (see pages 8-9 in particular). WO' 629 teaches that hematopoietic progenitor cells are obtained from blood product wherein blood product is unfractionated bone marrow (see pages 5 and 26 in particular). WO' 629 teaches that hematopoietic progenitor cells areCd34+ or $CD34^-$ or can be isolated from nonnucleated cells or enriched for cells having a common marker (see examples 1-4 in particular). WO' 629 teaches that hematopoietic progenitor cells are cultures in the presence of various growth factor that promote differentiation such as bFGF (see pages 6 , 12, 15 and 16 in particular).

Though WO' 629 does not explicitly teaches the growth conditions that promote differentiation to produce neuronal cells, WO'629 does not limit the use of claimed method to induced differentiation only into hematopoietic cell lineage and excluded the use of different growth factors to promote hematopoietic progenitor cell differentiation into non-hematopoietic cell lineage.

US Patent '927 teach a method for in vitro culturing progenitor cells to produce neuronal cells (see entire document, Abstract in particular). US Patent '927 teaches that although growth in the presence of only bFGF is sufficient to induced differentiation into neuronal cells, the presence of EGF in the differentiation medium is required for survival of cells (see columns 3, lines 1-15, column 6, lines 1-30 and column 21 in particular). US Patent '927 teaches a method for in vitro culturing progenitor cells to produce neuronal cells wherein growth differentiation medium comprises bFGF, EGF and NGF (see column 11, lines 1-10 Examples 10 and 25 in particular).

The Specification on page 11, lines 9-26 disclosed that at the time the invention was made a growth differentiation factors that promote differentiation into neuronal cells, such as bFGF EGF or NGF were well known to those of ordinary skill in the art. Moreover, as has been discussed, supra, as evidence from WO'0017326 or US Patent 5,397,706 at the time the invention was made one skill in the art would know that depending on the growth conditions and

growth factors hematopoietic progenitor cells can be induced to differentiate into various specialized types of cells of hematopoietic or non-hematopoietic lineage.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the teaching of US Patent '927 and the known fact disclosed in the specification on page 11, lines 9-26 to those of WO' 629 to obtain a claimed method for in vitro culture of hematopoietic progenitor cells to produce differentiated cells of non-hematopoietic lineage, wherein said differentiated cells are neuronal cells and wherein differentiation conditions comprises bFGF and EGF.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so, because growth differentiation condition wherein said conditions comprising bFGF and EGF were well known in the art and used to produce neuronal cells to taught by the known fact disclosed on page 11 and US Patent '927. Said conditions can be used in the method for in vitro culturing progenitor cells to produce differentiated cells taught by WO'629. The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. In re Semaker. 217 USPQ 1, 5 - 6 (Fed. Cir. 1983). See MPEP 2144.

From the combined teaching of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

6. No claim is allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michail Belyavskyi whose telephone number is 571/ 272-0840 The examiner can normally be reached Monday through Friday from 9:00 AM to 5:30 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on 571/ 272-0841 .

The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAIL BELYAVSKYI, PH.D.
PATENT EXAMINER
3/2/07